

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2014-XXXX

WASTE DISCHARGE REQUIREMENTS
FOR
MUSCO OLIVE PRODUCTS, INC. DBA MUSCO FAMILY OLIVE COMPANY
AND
THE STUDLEY COMPANY
FOR
MUSCO FAMILY OLIVE COMPANY (TRACY PLANT)
CLASS II SURFACE IMPOUNDMENTS
SAN JOAQUIN COUNTY

The California Regional Water Quality Control Board, Central Valley Region, (hereafter Central Valley Water Board or Board) finds that:

1. Musco Olive Products, Inc. doing business as (dba) Musco Family Olive Company, owns and operates the Musco Family Olive Company's Tracy Plant (facility) about 5 miles southwest of Tracy, in Section 34, T2S, R4E, MDB&M. At an elevation of 280 feet above sea level, the facility is on the eastern slope of the Diablo Mountain Range. The facility is south of Interstate 580 and east of Patterson Pass Road, as shown in Attachment A, which is incorporated herein and made part of this Order by reference. Musco Olive Products, Inc. and the Studley Company own land upon which the facility operates (landowners). The owner, operator, and landowners are hereinafter referred to jointly as "Discharger". The Discharger operates Class II surface impoundments hereinafter referred to as a Waste Management Unit (WMU) or "Pond" that are regulated under authority given in Water Code section 13000 et seq.; California Code of Regulations, title 27 ("Title 27"), section 20005 et seq.
2. The facility is on a 308.73-acre property. Of the 308.73 acres, the existing facility comprises 280 acres located at 17950 Via Nicolo Road, Tracy. The remaining 28.73 acres were recently purchased by the Musco Olive Products, Inc. to build two new Class II surface impoundments. The two new Class II surface impoundments will serve as replacement wastewater storage and evaporation capacity for one non-functional Class II surface impoundment (Pond A) that is proposed to be taken out of service following the commissioning of two replacement surface impoundments, Ponds C and D. The two new surface impoundments will be located adjacent to the existing facility.
3. The facility currently consists of two Class II surface impoundments (Ponds A and B) and the Discharger is proposing two new Class II surface impoundments (Ponds C and D) as shown in Attachment B, which is incorporated herein and made part of this Order by reference. The facility is comprised of Assessor's Parcel Numbers (APN) 209-110-19, 209-110-31, 209-110-32, 251-320-08, and 251-320-09 owned by the Studley Company, and APN 209-110-06 owned by Musco Olive Products, Inc. Ponds A and B are located on APN

209-110-31 and Ponds C and D will be located on APN 209-110-06. The Musco Family Olive Company currently leases the property from the Studley Company for its existing operations including land application of waste generated by said operations.

4. The facility has been in operation at this site since 1983 and consists primarily of fresh olive storage tanks, olive treatment tanks, boilers, olive processing equipment for olive preparation, such as de-stemming and pitting, and canning operations.
5. Approximately 200 employees currently work at the facility. Domestic wastewater is discharged to an on-site septic system regulated by the San Joaquin County Environmental Health Department. The septic system, located in the former land application area of waste called "Evaporation North", occupies acreage northwest of Ponds A and B. The system distributes sanitary wastewater to three banks of leach fields as shown on Attachment B. Facility process wastewater is no longer applied to that area and domestic wastewater is not commingled with process wastewater. The on-site septic system was expanded in 2003 to provide capacity for up to 500 employees.
6. The Discharger also operates a 200,000-gallon reservoir surge tank, an 84 million gallon (MG) reservoir, and approximately 160 acres of land for application of non-designated waste that is regulated under separate Waste Discharge Requirements (WDRs) Order R5-2010-0025.
7. These WDRs are necessary to regulate the two existing Class II surface impoundments and two new Class II surface impoundments that the Discharger is proposing to construct. The Class II surface impoundments are used for containment and evaporation of hypersaline wastewater generated from olive processing. The hypersaline solution is characterized as non-hazardous designated waste and as such is regulated under Title 27 section 20005 et seq. The constituents of concern (COCs) in the wastewater are predominantly salts and total nitrogen as it relates to nitrates in drinking water supplies. These COCs are quantified as electrical conductivity (EC), total dissolved solids (TDS), sodium, chloride, sulfate, pH, chemical oxygen demand (COD), total Kjeldahl nitrogen (TKN), ammonia-nitrogen, nitrate-nitrogen, bicarbonate, calcium, magnesium, potassium, and total alkalinity.
8. On 13 December 2013, the Discharger submitted an amended Report of Waste Discharge (ROWD). The information submitted in the ROWD did not contain all the applicable information required by Title 27, and Board staff used information provided as well as other sources including the case files, monitoring reports, and WDRs Order R5-2010-0025 in revising these WDRs. This Order requires the Discharger to provide the missing information required in a ROWD. The revisions include:
 - a. Closure of Pond A due to its non-operational Leachate Collection and Removal System (LCRS).

- b. Replacement of Pond A with construction of two new Class II surface impoundments designated as Ponds C and D.
 - c. Expansion of the Water Monitoring System to include surface water, groundwater, and unsaturated zone monitoring associated with new Ponds C and D.
 - d. Revision of Monitoring and Reporting Program (MRP) No. R5-2005-0024 to include monitoring and reporting associated with addition of Ponds C and D.
 - e. Establishment of a Water Quality Protection Standard to include background concentrations of all monitored mediums e.g. ground water, surface water, unsaturated zone, and concentration limits and criteria for determining whether there is “measurably significant” evidence that a release from a WMU has occurred.
 - f. Corrective action for replacement of improperly operating or failed unsaturated zone monitoring devices surrounding Pond B.
 - g. Corrective action for monitoring wells where screen intervals no longer capture declining groundwater elevations.
 - h. Establishment of minimum freeboard limitation criteria to ensure Class II surface impoundments have adequate storage during wet season to protect ponds from possible catastrophic failure due to overtopping and/or blowout.
 - i. Establishment of Action Leakage Rates (ALR) for new Ponds C and D for determining when leak inspections and repairs must be initiated and performed in order to maintain integrity of the waste containment liner system.
9. The existing and future Class II WMUs (also known as Ponds) authorized by this Order are described as follows:

Pond ID	Area	Liner/LCRS ¹ Components ²	Unit Classification & Status
A	5.4 acres	Double lined with FML over LCRS over Clay	Class II, ready for closure
B	4.5 acres	Double lined with FML over LCRS over Clay	Class II, active
C	4.9 acres	Double lined with FML over LCRS over FML over compacted subgrade	Class II, proposed future
D	5.1 acres	Double lined with FML over LCRS over FML over compacted subgrade	Class II, proposed future

¹ LCRS – Leachate Collection and Removal System

² FML-Flexible Membrane Liner (synthetic liner), Clay-low permeability soil having maximum hydraulic conductivity < 1 x10⁻⁶ cm/sec

10. On 27 January 2005, the Central Valley Water Board issued Order No. R5-2005-0024 wherein the existing WMUs at the facility were classified as Class II WMUs for the discharge of designated waste. This Order continues to classify the existing WMUs as Class II WMUs in accordance with Title 27. This Order also finds that the two new proposed Ponds C and D are classified as Class II WMUs in accordance with Title 27.
11. WDRs Order No. R5-2005-0024 in reporting requirements Section H specified that the Discharger shall submit the following documents:
 - a. Submit a work plan with a schedule describing details for installation of monitoring wells surrounding Ponds A and B by 1 March 2005.
 - b. Submit a work plan with a schedule describing details for a Leachate Collection and Return System (LCRS) and lysimeter test of Ponds A and B by 1 March 2005.
 - c. Submit Water Quality Protection Standards (WQPS) for the detection monitoring system based on background (minimum of 8 discrete sampling events) by 1 March 2005.
 - d. Submit a closure and post-closure maintenance plan that complies with Title 27 CCR at least 180 days prior to closure.

Since the adoption of WDRs Order No. R5-2005-0024, a brief chronology for each of the four items listed above is described hereafter.

Installation of Additional Monitoring Wells

12. WDRs Order No. R5-2005-0024 required the installation of new groundwater monitoring wells to replace upgradient well MW-11, which had monitored shallow groundwater at 233 ft mean sea level (msl) before going dry after five sampling events. The base elevation at the bottoms of Ponds A and B are approximately 262 ft msl and 256 ft msl respectively.
13. On 29 March 2005, the Discharger submitted a revised well installation plan to install two new wells MW-17 (~200 ft msl) and MW-18 (~170 ft msl) to replace monitoring well MW-11. On 15 June 2006, Board staff approved the revised plan.
14. On 6 May 2005, Board staff notified the Discharger that it has detected increasing concentrations of total dissolved solids, chloride, sodium, nitrate, and sulfate in cross-gradient well W-2 (~232 ft msl). The notification required the Discharger to implement an Evaluation Monitoring Program (EMP) to determine the nature and extent of a release from the surface impoundments.
15. On 8 August 2005, the Discharger attributed increasing concentrations in monitoring well MW-2 to declining water levels in the well over the past three years. The Discharger proposed to postpone implementing an EMP until it collected eight samples from newly

installed monitoring wells MW-17 and MW-18. The Discharger proposed to establish WQPS using inter-well analysis by April 2007.

16. On 28 April 2006, Board staff issued a Notice of Violation (NOV) to the Discharger for amongst other things operating a Detection Monitoring System (DMP) that was not sufficient to detect releases from the Class II surface impoundments and therefore did not comply with Title 27. Board staff found that point of compliance wells MW-11 (cross-gradient of Pond A) and W-2 (downgradient of Pond B) had gone dry and must be re-evaluated/reconstructed. Board staff found that additional detection wells were required to monitor shallow water bearing zones in the vicinity of Pond A.
17. On 21 May 2006, the Discharger responded to the 28 April 2006 NOV by presenting the argument why its DMP complied with Title 27 requirements.
18. On 14 June 2006, the Discharger proposed an alternative DMP in lieu of installing additional groundwater monitoring wells. The Discharger proposed increasing the frequency of monitoring of the LCRS, vadose zone lysimeters, and conducting an annual water level study.
19. On 27 July 2006, Board staff notified the Discharger that upon review of the Discharger's DMP, it affirmed its conclusion that the DMP did not comply with Title 27 requirements. Board staff found that monitoring wells W-2 (dry), MW-11 (dry), and MW-17 were inadequate to monitor shallow groundwater beneath the surface impoundments. Furthermore, MW-12 and MW-18 were inadequate to monitor deep groundwater beneath the surface impoundments.
20. On 14 August 2006, the Executive Officer issued an Order pursuant to California Water Code section 13267 requiring the Discharger to submit a technical report that included a work plan addressing deficiencies in the DMP.
21. On 13 September 2006, the Discharger responded to the 13267 Order by agreeing to install additional wells as necessary to bring the DMP for the Class II surface impoundments into compliance with Title 27 requirements.
22. In October 2006, the Discharger installed one deep monitoring well (MW-22) and three shallow monitoring wells MW-19 through MW-21.
23. On 14 April 2008, the Discharger submitted a technical memorandum regarding their *Phase II Background Groundwater Quality Characterization*, which summarized additional well installation activities.
24. On 9 June 2010, Board staff upon review of the Discharger's 2009 Annual MRP Report, notified the Discharger that groundwater monitoring network did not comply with Title 27 requirements since monitoring well MW-18 (intermediate zone) and all shallow monitoring wells MW-11, MW-17, MW-19, MW-20, MW-21, and W-2 had been dry for several quarters.

The Discharger was notified that at least one background monitoring well was also needed for each groundwater zone (shallow and intermediate).

25. On 9 November 2010, Board staff conditionally approved the Discharger's work plan for improving its DMP for the Class II surface impoundments. The improvements included installation of four intermediate zone monitoring wells, relocating monitoring well MW-20R, installing an additional well southwest of MW-18, and evaluating a backup location for proposed background well MW-19R.
26. On 9 November 2010, Board staff notified the Discharger that before replacement wells MW-18R, MW-20R, MW-21R could be added to the DMP, the wells must comply with the turbidity standard of SW-846 or ASTM.
27. The Discharger submitted its 2013 annual MRP report dated 31 January 2014, which stated that the shallow groundwater monitoring network MW-10, MW-11, MW-19, MW-20, MW-21, and W-2 had gone dry due to perched groundwater that most likely is no longer present. These WDRs require the Discharger to continue to monitor the shallow perched water bearing zone as required by Title 27 (monitoring of perched zones and zones of high hydraulic conductivity). The current groundwater monitoring network where water is present in the intermediate zone consists of monitoring wells MW-10R, MW-18R, MW-20R, MW-21R, and MW-22.
28. Monitoring wells MW-12, MW-17, and MW-18 in the intermediate zone have gone dry over time due to water levels in the wells falling below the screened interval in each well. (MW-18 was replaced with new monitoring well MW-18R.) These WDRs require the Discharger to replace MW-12 and MW-17 with new wells with appropriate screen placement to monitor current water levels.

LCRS and Lysimeter Testing

29. On 25 February 2005, due to serious concerns with injecting water into the LCRS, the Discharger notified Board staff that it would not be submitting a work plan as required by R5-2005-0024 Reporting Requirements F.2.b by 1 March 2005 for testing the LCRS system in Ponds A and B. The Discharger requested further discussion on this reporting requirement.
30. On 29 July 2005, the Discharger provided Board staff with an alternative test to injecting water into the LCRS. The Discharger proposed monitoring water level changes in the ponds in comparison to estimated losses to the ponds due to evaporation. If declining water levels in the ponds equals the estimated rate of evaporation a conclusion could be made that no leakage has occurred to the LCRS. The Discharger performed this evaluation during a period from 11 March to 18 March 2005 and concluded that the LCRS in both ponds were functioning properly.
31. On 9 May 2006, the Discharger reported to Board staff that a complete audit of the lysimeters monitoring Ponds A and B was conducted on 10-11 May 2006. The audit found

that five lysimeters (#13, #32, #36, #37, and #38) were non-functional and required repair to bring back to operational condition. One lysimeter (#13) was determined to be non-repairable.

32. On 15 June 2006, Board staff responded to the Discharger's 29 July 2005 request to perform an alternative test to injecting water into the LCRS. Board staff noted that the proposed alternative test was not consistent with industry standard practice and that the Discharger must provide additional justification as to why injecting water into the LCRS was considered risky.
33. On 22 February 2007, Board staff issued a Notice of Violation (NOV) to the Discharger for non-compliance with Monitoring and Reporting Program (MRP) Order No. R5-2005-0024, Section D.5. The NOV required the Discharger to provide LCRS operational data completed in 2006 and an evaluation comparing the data to previous LCRS test data.
34. On 9 June 2010, Board staff upon review of the 2009 Annual MRP Report, notified the Discharger that Title 27 Section 20415(d)(2)(A) requires that unsaturated zone monitoring must include *"background monitoring points that represent soil pore measurements that represent the quality of soil pore liquid that has not been affected by a release from the unit."* The notification required the Discharger to install background lysimeters. Regional staff also notified the Discharger that many of the 38 lysimeters installed did not hold adequate initial or residual suction during the monitoring period. On 29 September 2010, the Discharger submitted the required workplan to install monitoring wells and background lysimeters. The workplan was approved by Board staff and these background lysimeters were installed.
35. On 18 April 2011, Board staff upon review of the 2010 Annual MRP Report notified the Discharger that monitoring reports indicate that the Discharger had not performed the annual LCRS testing as required by the MRP. Furthermore, Board staff was concerned that the unsaturated zone monitoring system (lysimeters) below Ponds A and B *"may not adequately detect leaks from the liners"*.
36. On 17 May 2011, the Discharger requested an extension for the deadline to submit a work plan to perform the annual LCRS test on Ponds A and B.
37. On 29 July 2011, Board staff concurred with the Discharger's work plan to test the operability of the LCRS in Ponds A and B and requested that the results be reported in the 2011 Annual MRP report.
38. The Discharger's 2011 Annual MRP Report indicated that the LCRS in Pond A was inoperable due to its inability to return any water injected into the LCRS to the LCRS sump. The annual report also indicated that the LCRS in Pond B was only capable of returning 40% of the water injected into the LCRS. The inoperability of the LCRS in Pond A was in violation of WDRs Order R5-2005-0024 Discharge Specifications B.13 which states, in part,

that the LCRS shall be designed, constructed, and maintained to prevent the buildup of hydraulic head on the underlying liner at any time.

39. On 4 May 2012, Board staff issued a Notice of Violation for failure of the LCRS in Pond A and required evaluation of the condition of the LCRS in Pond B.
40. On 15 June 2012, the Discharger proposed retesting the LCRS in Ponds A and B in July/August 2012 and submitting the results by January 2013. On 16 August 2012, Board staff authorized the retesting of the LCRS in Ponds A and B using a pass/fail criteria of a minimum of 40% of injected water must be returned to the pond's LCRS sump.
41. On 14 December 2012, the Discharger reported that the LCRS in Pond A continued to fail operability tests and that the Discharger was considering constructing replacement Class II surface impoundments.
42. On 13 March 2013, the Discharger provided a status report to Board staff on its activities regarding construction of additional storage and evaporative capacity as replacement following decommissioning of Pond A. These WDRs address the addition of two new Class II surface impoundments as replacements to Pond A for designated waste containment.
43. The Discharger's 2013 Annual MRP Report in Table 3 does not provide results for Suction Lysimeters #33 through #38, which monitor the unsaturated zone along the northeast side of Pond B. There is also a discrepancy with data reported for Lysimeter #19. Therefore, these WDRs require the Discharger to repair/replace nonfunctional lysimeters and provide an accurate historical record of the status of each lysimeter used in the unsaturated zone monitoring system.

Establishment of WQPS

44. On 12 May 2005, the Discharger notified Board staff that there was insufficient data to perform inter-well analysis to determine ambient and down-gradient constituent levels required to establish WQPS. The Discharger proposed ongoing monitoring until sufficient data was available to perform statistical analysis. The Discharger proposed interim WQPS for monitoring wells MW-7, MW-10, and MW-12.
45. On 8 August 2005, the Discharger proposed to postpone establishing a WQPS until it collected eight samples from newly installed monitoring wells MW-17 and MW-18. The Discharger proposed to establish WQPS using inter-well analysis by April 2007.
46. On 17 November 2006, Board staff notified the Discharger that background groundwater concentrations associated with the Class II surface impoundments could not be established at the facility due to select elevated COCs in all shallow onsite wells. Board staff proposed interim WQPS for deep groundwater beneath the site, and installation of additional groundwater monitoring wells offsite outside of the impacted shallow zone to establish background concentrations. The Discharger responded by preparing a Background

Groundwater Quality Assessment Workplan dated 27 February 2007 which proposed a shallow background well outside the impacted shallow zone.

47. On 15 December 2006, Board staff notified the Discharger that its proposal to use "ambient" concentrations as background concentrations for establishing WQPS was inappropriate at a site where shallow groundwater may have been impacted. Board staff also notified the Discharger that the interim WQPS for the deep groundwater monitoring zone should be used in future groundwater monitoring reports.
48. On 21 March 2007, Board staff notified the Discharger that it had reviewed the Discharger's *Background Groundwater Quality Assessment Work Plan* dated 27 February 2007 and concurred with the Discharger's proposal, amongst other things, to install shallow and deep background wells in the vicinity of the Hansen Well (also referred to as the Harpainter well).
49. On 11 January 2008, Board staff notified that Discharger that monitoring well MW-24 adequately represented shallow background conditions at the facility. Board staff recommended the Discharger collect eight samples from MW-24 and includes concentration limits for shallow groundwater in its 2007 Annual Report.
50. On 9 June 2010, Board staff notified that Discharger that it did not accept the proposed WQPS for the Class II surface impoundments. Board staff requested that the Discharger submit a work plan that evaluated the groundwater monitoring system, the unsaturated zone monitoring system, and developed a WQPS by 30 August 2010.
51. The Discharger's 2013 Annual MRP Report does not include WQPS for compliance wells associated with Ponds A and B in the intermediate groundwater zone. Furthermore, the Discharger has not established WQPS for lysimeters monitoring the unsaturated zone below Ponds A and B. These WDRs require the Discharger to establish WQPS including concentration limits used to determine whether there is significant evidence of a release from the WMUs (Ponds A and B) as required by Title 27.

Submittal of Closure and Post-closure Maintenance Plan

52. WDRs Order No. R5-2005-0024 required the Discharger to submit financial assurances by 30 April of each year beginning in 2005 for closure and post-closure maintenance. Title 27 section 21769(b) requires the Discharger to submit a preliminary closure and post-closure maintenance plan with a cost analysis necessary to close any WMUs.
53. On 15 May 2005, Board staff notified the Discharger that it had not received financial assurances as of 30 April as required by WDRs Order No. R5-2005-0024.
54. On 15 June 2005, the Discharger submitted a cost estimate of \$67,000 for reasonably foreseeable release from Ponds A and B and estimated cost of \$254,832 for clean closure of Ponds A and B. The Discharger proposed using the "Letter of Credit" mechanism to provide financial assurances.

55. On 28 July 2005, Board staff notified the Discharger that the closure and corrective action estimate and financial assurances proposal submitted was incomplete. The Discharger was requested to submit a revised closure and corrective action estimate and financial assurances by 1 October 2005.
56. On 5 October 2005, the Discharger submitted a revised closure and corrective action estimate of \$67,000 for reasonably foreseeable release from Ponds A and B and estimated cost of \$662,000 for clean closure of Ponds A and B.
57. On 11 October 2005, the Discharger submitted a financial assurances mechanism using the "*Financial Means Test*" (Title 27 section 22246) estimating that it needed \$1 million in financial assurances at the facility. However, the Discharger did not provide required submittals under Title 27 section 22246(h) to substantiate fulfillment of the proposed funding mechanism.
58. From 2005 through 2013, the Discharger had not submitted the required supporting information under Title 27 section 22246(h) necessary to utilize the *Financial Means Test* as the mechanism for complying with financial assurances requirements in Title 27.
59. On 21 May 2014, the Discharger provided a revised clean closure plan for Ponds B, C, and D. The estimate for clean closure of the three ponds at the end of their useful life was \$2,333,700. However financial assurances for all four ponds must be provided at the time of adoption of this Order. Therefore, Board staff used the estimate of \$943,900 for clean closure of Pond B at the end of its useful life, similar in construction to Pond A, and applied it towards estimating the clean closure of Pond A. Board staff estimated a cost of \$3.28 million in 2014 dollars to clean close all four Class II surface impoundments at the end of their useful life. The majority of the final cost estimate is for disposal of solids accumulation in the surface impoundments over their useful life. If a third party were required to clean close the surface impoundments prematurely, the total cost estimate at the time of closure would be reduced. These WDRs allow the Discharger to provide prorated financial assurances based on estimated solids accumulation over their useful life. These WDRs require the Discharger to provide an updated cost for closure based on solids accumulation for each surface impoundment by 17 April 2015. This Order requires the Discharger to provide and maintain financial assurances on a prorated basis for the eventual clean closure of all four Class II surface impoundments at the facility as provided under Title 27 section 22228.
60. This Order implements the applicable regulations for discharges of designated waste to land through Prohibitions, Specifications, Provisions, and monitoring and reporting requirements. Prohibitions, Specifications, and Provisions are listed in Sections A through H of these WDRs below, and in the applicable Standard Provisions and Reporting Requirements, dated November 2013 (SPRRs), which are attached hereto and made part of this Order. Monitoring and reporting requirements are included in the Monitoring and Reporting Program (MRP) No. R5-2014-XXXX and in the SPRRs. In general, requirements that are either in regulation or otherwise apply to all facilities regulated under Title 27 are

considered to be “standard” and are therefore in the SPRRs. Any site-specific changes to a requirement in the SPRRs are included in the applicable section (A through H) of these WDRs, and the requirement in the WDRs supersedes the requirement in the SPRRs.

WASTE CLASSIFICATION AND UNIT CLASSIFICATION

61. The Discharger proposes to continue to discharge designated waste to lined Class II surface impoundments at the facility. These classified wastes may be discharged only in accordance with Title 27.
62. Water Code section 13173 defines “*Designated Waste*” as either of the following:
 - a. Hazardous waste that has been granted a variance from hazardous waste management requirements pursuant to section 25143 of the Health and Safety Code.
 - b. Nonhazardous waste that consists of, or contains, pollutants that, under ambient environmental conditions at a waste management unit, could be released in concentrations exceeding applicable water quality objectives or that could reasonably be expected to affect beneficial uses of the waters of the state as contained in the appropriate state water quality control plan.

Unless exempt under Title 27 section 20090, designated waste can be discharged only at Class I waste management units, or at Class II waste management units which comply with Title 27 and have been approved by the Water Board through adoption of WDRs for containment of the particular kind of waste to be discharged.

63. Wastewater is generated from the storage area, the processing areas, the canning areas, and from certain incoming water treatment and boiler feed water treatment processes. Source water for processing comes from California Aqueduct water obtained from the Department of Water Resources State Water Project (SWP). The SWP monitors the water quality at the Harvey Banks Delta Pumping Plant (HBDPP) for parameters, including but not limited to, temperature, turbidity, pH, electrical conductivity (EC) and flow. Source water is treated prior to use in the plant.
64. The Discharger estimates in the ROWD that wastewater sent to existing Class II surface impoundments is generated from the following sources in the quantities and COC concentrations listed below:

Wastewater Source	Estimated flow in gallons per day (gpd)	BOD (mg/L)	NO ₃ (mg/L)	TKN (mg/L)	TDS (mg/L)	FDS (mg/L)	Na (mg/L)	Cl (mg/L)
Neutralization Brine	28,339	14,913	0.9	300	20,050	10,884	2,863	1,216
Boiler Top Blowdown	1,700	4.0	2.0	1	1,179	1,060	404	425

Floatation Brine	3,401	1,202	<0.1	28	21,238	20,050	7,144	12,538
Softener Regeneration	907	3,653	<0.1	58	26,125	25,233	6,100	16,456
Sumps and Miscellaneous	10,995	5,450	0.5	79	9,200	5,180	1,477	349
	Total= 45,342	-	-	-	-	-	-	-

65. Based on the estimated daily flow, an annual flow based on 365 days of operation at the facility would indicate that 16.5 million gallons of wastewater would be sent annually to the Class II surface impoundments. However, the Discharger has indicated that the facility routinely shuts down for maintenance purposes and that annually approximately 14.6 million gallons of wastewater would be sent to the Class II surface impoundments. Thus, a revised water balance was submitted by the Discharger based on the Class II surface impoundments accepting 14.6 million gallons of wastewater annually.
66. The Discharger provided COC data in the amended ROWD for samples collected from the existing surface impoundments Pond A and B dating from May 2002 to January 2013. The average concentrations are shown in the table below. The table also includes the lowest applicable water quality objective (WQO) for groundwater protection of beneficial uses. COC concentrations that exceed the WQO are in bold.

COC		Pond A	Pond B	Lowest Applicable WQO or Goal
Electrical Conductivity	µmhos/cm	70,991	68,318	700 ¹ , 900 ³
Total Dissolved Solids	mg/L	112,391	78,687	450 ¹ , 500 ³
Nitrate as nitrogen	mg/L	15.3	8.5	10 ²
Sodium	mg/L	24,287	19,226	69 ¹
Chloride	mg/L	23,884	20,300	106 ¹ , 250 ³
Sulfate	mg/L	302	152	250 ³

¹ Agricultural Water Quality Goals (Food & Ag Org. of United Nations)

² CA Department of Public Health- Primary Maximum Contaminant Levels (1st MCL)

³ CA Department of Public Health- Secondary Maximum Contaminant Levels (2nd MCL)

67. The data indicates that the discharge consists of or contains pollutants that, under ambient environmental conditions at a waste management unit, could be released in concentrations exceeding applicable water quality objectives or that could reasonably be expected to affect beneficial uses of the waters of the state. Therefore, the discharge is a 'designated waste'

and as such must be discharged to a Class II waste management unit as required by Title 27.

68. The existing and proposed surface impoundments utilize a double liner which surrounds a leachate collection and recovery system (LCRS). The LCRS situated between the two liners returns any leakage of designated waste through the primary liner back to the surface impoundment from where it originated. The LCRS also serves to prevent any leakage through the primary liner from developing hydraulic pressure on the secondary containment system (secondary liner) which if breached would result in a release of designated waste from the WMU.

SITE DESCRIPTION

69. The facility is located on the eastern foothills of the Coast Range Mountains at the western edge of the alluvial deposits of the San Joaquin Valley of the Diablo Range. The alluvial fan generally slopes to the northeast, and surface elevations at the facility range from 540 feet above mean sea level (MSL) to 240 feet MSL. Slopes range from approximately 20 percent in the southern part of the facility to nearly flat in the northern portions of the facility.
70. Deposits exposed in the area of the facility include (from bottom to top) the Miocene to Pliocene Neroly Formation, the Pliocene to early Pleistocene Tertiary Pliocene sediments (Tps), and older and younger Quaternary alluvium. The Neroly Formation is a marine to non-marine blue to gray sandstone that is locally pebbly. The Neroly underlies the facility with only minor exposures on the south side of the facility. The top of the Neroly Formation is blue clay, which is used as a marker bed for the transition from the Neroly Formation to the Tps, where the Tps conformably overlies the Neroly. The Tps is exposed across most of the facility and consists of fine-grained sands and clayey silts that alternate with greenish gray clays and minor pebble conglomerates, marl, and sand of non-marine origin. Overlying the Tertiary sediments is older and younger Quaternary alluvium consisting of unconsolidated gravels, sands, silts, and clays. Older alluvium is surficially exposed in minor amounts in the northern portion of the facility as terrace deposits. The younger alluvium occurs as thin surficial deposits in the central drainage swale that bisects the facility, with lesser amounts in tributary drainages. Sediments at the facility are derived primarily from marine deposits of the Coast Ranges.
71. The Tertiary sediments are complexly folded and regionally dip 25 to 30 degrees to the northeast. Based on the blue clay at the top of the Neroly Formation, dips on the facility appear to be approximately 20 degrees to the northeast on the south side of the central drainage swale and approximately 10 degrees to the northeast on the north side of the central drainage swale.
72. The Midway fault is located approximately 500 feet southwest of the southwestern corner of the property, and trends northwest/southeast. A lineament parallel to the Midway fault has been mapped bisecting the facility and a series of parallel faults are found further to the southwest. Structure southwest of the facility is fault-blocked anticlines and synclines. The

Midway fault is a normal fault that strikes to the northwest with the down-dropped block on the southwest side of the fault. The significance of these faults and lineaments is that they may provide conduits for to the vertical migration of fluids.

73. Fractures are present in outcrops of the Tps and Neroly at and near the facility. These fractures are steeply dipping and occasionally filled with permeable clastic material. The permeable material may provide a conduit for the vertical migration of fluids.
74. The soils at the facility are predominantly clay, clayey silt and silty clay. Two-thirds of the western portion of the facility is located on the materials from the Pliocene period, which consist of sedimentary deposits of the Tulare and Laguna formations. The other one-third (eastern) is situated on the Pleistocene non-marine sediments. Soils at the facility are predominantly mapped as Calla-Carbona complex and Carbona clay loam by the Natural Resource Conservation Service (NRCS). Carbona complex and Cogna fine sandy loam are also found. Calla-Carbona complex is comprised of 45 percent Calla clay loam and 40 percent Carbona clay loam. The Calla soil is described as very deep and well drained on strongly sloping to moderately steep terrain. The Carbona clay loam is described as very deep, well-drained soils on gently to moderately sloping terrain. Carbona complex soils are described as moderately steep and steep soils that are comprised of 45 percent Carbona clay loam and 40 percent Carbona clay loam containing a sandstone substratum at approximately 57 inches. Both of these soils are deep and well drained. Cogna fine sandy loam is described as very deep, well drained, nearly level soil on alluvial fans.
75. There is one onsite supply well that is used for the facility's domestic water supply. The well, Musco-1, is screened from 207 to 607 feet below ground surface with a 50-foot sanitary seal.
76. There is a domestic supply located in the vicinity of the proposed Pond D. Upon completion of Pond D this well will no longer be used for domestic supply but will be retained for landscape irrigation. This well is screened from 235 to 335 feet below ground surface with a 50-foot sanitary seal. This well appears to be cross-gradient from the site.
77. There is an artesian well in the drainage northwest of and adjacent to the site. This well is of unknown construction. The fact that this well is a flowing artesian (i.e., the water level is above the ground surface) and the location is 30 to 40 feet in elevation above the drainage indicates there are upward vertical gradients in the area. Water from this well is used for stock watering.
78. Known groundwater uses within one mile of the site include stock watering and small domestic supply wells.
79. The ROWD describes the area surrounding the facility as largely undeveloped. Local land use is primarily open space, with some neighboring industrial, residential, and agricultural operations. The City of Tracy is located approximately five miles northeast of the facility and includes a mixture of industrial, commercial, and residential uses. A railroad right-of-way

crosses both the northern and southern portions of the facility along west-east alignments. Highway 580 is located adjacent to the facility along the northeastern border. Both the California Aqueduct and the Delta-Mendota Canal are located to the northeast opposite Highway 580.

80. The Discharger at the time of adoption of these Orders was unable to provide information with sufficient detail on the number of municipal, domestic, industrial, or agricultural groundwater supply wells within one mile of the facility as required by Title 27 section 21750(h). This Order requires the Discharger to provide such information.
81. Based on a site-specific seismic analysis, the controlling Maximum Considered Event (MCE) for the site is a moment of magnitude 6.7 event along the Great Valley 7 fault at a closest rupture distance of 4.5 miles from the site. The Discharger's consultant Terraphase Engineering determined that a MCE event would produce a peak ground acceleration of 0.74g at the site using the United States Geological Survey's online seismic design maps tool (USGS 2013). The consultant used the methodology of American Society of Civil Engineers (ASCE) standard *Minimum Design Loads for Buildings and Other Structures* ASCE 7 (ASCE 2010) to develop the site specific seismic spectra.
82. The facility receives an average of 9.82 inches of precipitation per year as measured at the Western Regional Climate Center (WRCC) Tracy Carbona Weather Station. The reference evapotranspiration (ET_0) which is considered equal to the evaporation from a large body of water, such as a pond or lake is 53.48 inches per year as measured at the California Irrigation Management Information System (CIMIS) Tracy Station# 167.
83. The 100-year return period of the wettest year was calculated to be 21.0 inches based on the probability distribution of the WRCC's annual precipitation data at the Tracy Carbona Weather Station for the period of record (1949-2012).
84. The 1,000-year, 24-hour precipitation event for the facility is estimated to be 3.14 inches, based on WRCC's estimation.
85. The waste management facility is not within a 100-year flood plain based on the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map, Community-Panel Number 0602990700A.

SURFACE WATER AND GROUNDWATER CONDITIONS

86. The *Water Quality Control Plan for Sacramento and San Joaquin River Basins, Fourth Edition* (hereafter Basin Plan), designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for all waters of the Basin.
87. Surface water drainage from the site is to an unnamed ephemeral stream that flows eastward toward the valley floor in the North Diablo Range Hydrologic Area (Unit# 543.00) of the San Joaquin Hydrologic Basin. Storm water from the process areas is collected in secondary containment, routed via drains to sumps and pumped to a wastewater holding

pond regulated by WDRs Order R5-2010-0025. Storm water from a small chemical storage area can be directed to the surface impoundments if warranted based on testing of characteristics. The Discharger's Industrial Storm Water Permit (WDID# 5S39I017003) issued under WDRs 97-03-DWQ Order, *Waste Discharge Requirements for Discharges of Storm Water Associated with Industrial Activities* (NPDES General Permit CAS000001) permits the discharge of storm water to surface waters in accordance with the Discharger's Storm Water Pollution Prevention Plan (SWPPP). The Discharger has established four surface water monitoring points SW-1 through SW-4 under the NPDES General Permit. The Discharger currently monitors for pH, biochemical oxygen demand (BOD), total dissolved solids (TDS), volatile dissolved solids (VDS), total suspended solids (TSS), ammonia, nitrate, total Kjeldahl nitrogen (TKN), sodium, chloride, sulfate, iron, calcium, bicarbonate, and carbonate. WDRs R5-2014-XXXX requires the Discharger to report monitoring results under the NPDES General Permit in order to determine if COCs in storm water runoff are influencing the groundwater monitoring network associated with the Class II surface impoundments. On 1 August 2014, the Discharger provided a letter dated 13 March 2002 from the Department of the Army, U.S. Corps of Engineers (Army Corps) stating that based on information the Discharger provided to the Army Corps, the Army Corps determined that the stormwater drainage to an unnamed ephemeral stream "is isolated with no apparent interstate commerce connection", and thus not currently regulated by the Army Corps under the Clean Water Act. The Discharger provided this information to suggest that its stormwater discharge is not subject regulation under the Clean Water Act.

88. The designated beneficial uses of the groundwater, as specified in the Basin Plan, are domestic and municipal water supply, agricultural supply, industrial service supply, and industrial process supply.
89. The Discharger's monitoring and reporting program has identified three distinct water bearing zones in the vicinity below the site. The shallow zone has been identified as groundwater existing less than 75 feet below ground surface (bgs). There are six shallow wells altogether monitoring the shallow zone (perched groundwater) underlying existing Ponds A and B. Shown below are the depths and a summary of the monitoring results:

Monitoring Well	WMU(s) monitored	Screened Depth (feet msl)	Monitoring Results
MW-10	Ponds A and B	236 to 246	Declining groundwater elevation since 04/2002. Reported dry (groundwater declined below bottom of screened interval) since 01/2005

MW-11	Ponds A and B	230.8 to 235.8	Declining groundwater elevation since 04/2002. Reported dry (groundwater declined below bottom of screened interval) since 12/2003 except for one monitoring event on 03/2006
MW-19	Ponds A and B	206 to 226	Installed as a dry well in 2006. Reported dry to date except for two monitoring events in 2011
MW-20	Ponds A and B	198 to 218	Installed as a dry well in 2006. No groundwater ever recorded to date.
MW-21	Ponds A and B	199 to 209	Installed as a dry well in 2006. No groundwater ever recorded to date.
W-2	Ponds A and B	211-241	Declining groundwater elevation since 04/2002. Reported dry (groundwater declined below bottom of screened interval) since 03/2006

90. Shallow zone monitoring data indicate that shallow ground water has declined to depths where it is no longer monitored. It is unclear if this shallow zone of perched water has disappeared or whether the monitoring system is no longer able to monitor it due to well screen placement. This Order in Provisions H.12.b.1 requires the Discharger to evaluate screened intervals for shallow monitoring wells MW-10, MW-11, and W-2.
91. The second zone, the intermediate zone has been identified as groundwater existing between 80 and 120 feet below ground surface (bgs). There are nine intermediate zone wells monitoring the existing Pond A and B. There is one intermediate zone well MW-34 monitoring Pond C. MRP No. R5-2014-XXXX incorporates MW-34 for compliance monitoring of groundwater beneath Pond C. Shown below are monitoring well screened depths and a summary of COC averages.

Monitoring Well	WMU(s) monitored	Screened Depth (feet msl)	EC umhos/cm (aver)	TDS mg/L (aver)	Na mg/L (aver)	Cl mg/L (aver)	NO ₃ as N mg/L (aver)
MW-10R	Ponds A and B	156 to 176	2,505	1,506	482	425	10.2
MW-12	Ponds A and B	166 to 181	Dry Well, see Finding 28				
MW-17	Ponds A and B	198 to 218	Dry Well, see Finding 28				

MW-18	Ponds A and B	164 to 183	Dry Well, see Finding 28				
MW-18R	Ponds A and B	145 to 165	3,518	2,083	630	622	5.0
MW-20R	Ponds A and B	145 to 165	3,884	2,624	693	543	18.3
MW-21R	Ponds A and B	138 to 158	3,157	1,923	560	527	10.1
MW-22	Ponds A and B	162 to 182	2,648	1,630	438	473	32.9
MW-32	Ponds A and B	158 to 178	Dry Well				
MW-34	Pond C	147 to 157	2,717	1,650	511	564	8.7

92. The Discharger has not established background groundwater quality for the intermediate zone. This Order requires the Discharger to establish background water quality for the purposes of establishing WQPS and concentration limits at each point of compliance and monitoring point in the intermediate zone (See Provisions H.12.a.3).
93. The direction of groundwater flow in the intermediate zone below Ponds A, B, and C is generally toward the northeast. The estimated average groundwater gradient is approximately 0.0036 feet per foot.
94. The third zone has been identified as groundwater existing around 156 feet below ground surface (bgs) associated with Pond D. The Discharger proposed one compliance well (MW-35) for monitoring Pond D and two piezometers (PZ-1 and PZ-2) used in conjunction with the compliance well MW-35 to establish groundwater flow and direction. The piezometers will be constructed as monitoring wells in case the groundwater gradient is different than expected. MW-35 will be replaced with MW-35R when Pond D is constructed. Shown below is the screened depth and a summary of the monitoring results:

Monitoring Well	WMU(s) monitored	Screened Depth (feet msl)	EC umhos/cm (aver)	TDS mg/L (aver)	Na mg/L (aver)	Cl mg/L (aver)	NO ₃ as N mg/L (aver)
MW-35 ¹	Pond D	100 to 120	2,405	1,577	493	235	5.8
PZ-1	Pond D	Piezometer used for monitoring groundwater elevation, but will be constructed as a monitoring well.					
PZ-2	Pond D	Piezometer used for monitoring groundwater elevation, but will be constructed as a monitoring well.					

¹ MW-35 will be destroyed during construction of Pond D and replaced with monitoring well MW-35R

95. The Discharger has not yet established the direction of groundwater flow in the zone below Pond D. This Order in Provisions H.12.b.2 requires the Discharger to establish groundwater flow and direction underneath Pond D to ensure that compliance well MW-35R complies

with Title 27 requirements in order to provide earliest detection of a release to underlying groundwater. MRP No. R5-2014-XXXX incorporates MW-35R and PZ-1 and PZ-2 for compliance monitoring of groundwater beneath Pond D.

GROUNDWATER, UNSATURATED ZONE, AND SURFACE WATER MONITORING

- 96. The existing groundwater monitoring network for the Class II surface impoundments consists of monitoring wells shown on Attachment C, which is incorporated herein and made part of this Order by reference.
- 97. The Discharger has not certified that the monitoring system at the facility satisfies the requirements contained in Title 27. This Order requires the Discharger to certify that the monitoring system complies with Title 27 requirements.
- 98. The Discharger operates an unsaturated zone monitoring system below Ponds A and B through 38 suction type lysimeters placed at either 5 feet or 10 feet below the secondary clay liner as shown in Attachment D, which is incorporated herein and made part of this Order by reference. The Discharger operates two lysimeters (BG-5 and BG-10) as background lysimeters located adjacent to a field identified as pasture land approximately 1600 feet northwest of Ponds A and B. Due to high EC and TDS reported in the 2013 1st semi-annual report from these background lysimeters may not be appropriate for establishing background concentrations for Pond A and B. These WDRs in Provisions H.12.b.1 require the Discharger to evaluate the current unsaturated zone monitoring system in order to bring the site into compliance with Title 27 requirements for detection monitoring within the unsaturated zone.
- 99. The Discharger has intermittently detected soil pore water in their suction lysimeters below Ponds A and B. Most recently the Discharger reported soil pore water in Lysimeters# 1, 4, 18, and 23. The monitoring results are shown below:

Lysimeter#	WMU(s) monitored	Date Sampled	EC umhos/cm (avg)	TDS mg/L (avg)	Na mg/L (avg)	Cl mg/L (avg)	NO ₃ as N mg/L (avg)
1	Pond A	03/15/2013	9,043	6,300	1,400	2,700	99.0
1	Pond A	01/03/2014	9,108	6,600	1,300	2,700	120.0
4	Pond A	03/15/2013	7,630	5,300	1,300	1,800	190.0
18	Pond A	03/15/2013	7,828	5,500	1,300	1,700	210.0
23	Pond B	03/06/2013	689	510	61	19	14

Monitoring results in soil pore water indicates elevated concentrations of nitrates in lysimeters below Pond A when compared with nitrate concentrations in groundwater monitoring wells installed in the intermediate zone underlying Pond A.

100. The Discharger operates an unsaturated zone monitoring system below Ponds C and D through one pan-type lysimeter placed directly below each pond LCRS sump (See Attachment D). The pan lysimeter monitors any leakage through the pond's secondary liner in the LCRS sump area. The LCRS sump area is considered the most likely area that a release from the Class II surface impoundment containment system will occur since the secondary liner in the sump area could experience the greatest head pressure (up to 1 foot) due to any leakage through the primary liner. Significant free liquid discovered in pan lysimeters PL-C and PL-D monitoring the unsaturated zone below Ponds C and D is considered evidence of a release from the containment system and requires the Discharger to respond in accordance with Title 27 requirements. MRP No. R5-2014-XXXX incorporates pan lysimeters PL-C and PL-D for compliance monitoring of the unsaturated zone beneath Ponds C and D.
101. The Discharger monitors water quality in the Class II surface impoundments as part of its surface water quality monitoring program. These WDRs prohibit the discharge of designated waste to waters of the state.
102. The Discharger conducts surface water monitoring of storm water related discharges through its Industrial Storm Water Permit (WDID# 5S39I017003) issued under WDRs 97-03-DWQ Order, *Waste Discharge Requirements for Discharges of Storm Water Associated with Industrial Activities* (NPDES General Permit CAS000001).
103. The Discharger's 2013 Annual MRP Report did not include a Water Quality Protection Standard (WQPS) report proposing statistical data analysis methods to calculate concentration limits for each monitored constituent in accordance with Title 27. This Order requires the Discharger to submit WQPS for Ponds B, C, and D in accordance with a time schedule.

GROUNDWATER CONDITIONS (OR DEGRADATION AND CORRECTIVE ACTION)

104. The Discharger has not reported any significant evidence of a release from the surface impoundments since adoption of WDRs R5-2005-0024. However, in the Discharger's 2011 Annual MRP Report, the required annual LCRS testing of Pond A indicated a non-functional LCRS. On 17 September 2013, the Discharger notified the Regional Board of its intentions as corrective action to construct two new Class II surface impoundments Ponds C and D. This Order incorporates the two new ponds and associated monitoring system and associated reporting program to ensure compliance with Title 27 requirements.
105. The proposed two new surface impoundments were designed to replace storage and evaporation capacity that will be lost when Pond A is decommissioned. Once Ponds C and

D are operational, as a corrective action measure, the Discharger will close and shall be prohibited from continuing to place waste in Pond A.

106. Due to its non-operational LCRS system in Pond A, an appropriate corrective action is to require the Discharger to lower the head pressure on the secondary clay liner in Pond A, and to ultimately clean close Pond A in accordance with the final closure plan and schedule provided in this Order.

DESIGN OF WASTE MANAGEMENT UNIT(S)

107. Water Code section 13360(a)(1) allows the Central Valley Water Board to specify the design, type of construction, and/or particular manner in which compliance must be met in waste discharge requirements or orders for the discharge of waste at solid waste disposal facilities.
108. Title 27 section 20310 Table 4.1 specifies the minimum construction standards for a double lined Class II surface impoundment consisting of, from top to bottom:
- a. A primary synthetic liner (40-mil minimum thickness).
 - b. A Leachate Collection and Removal System (LCRS) more commonly referred in industry as a Leakage Detection System (LDS) in surface impoundment applications.
 - c. A secondary clay liner consisting of minimum two-foot thickness with maximum hydraulic conductivity of 1×10^{-6} cm/sec.
109. The Discharger proposes an engineered alternative double liner system for the two new Class II surface impoundments consisting of, from top to bottom:
- a. A primary synthetic liner (80-mil High Density Polyethylene (HDPE) geomembrane).
 - b. A LCRS (Non-woven needle-punched 6-ounce geotextile bonded on both sides of a 300-mil tri-planar geonet). The LCRS will drain to a sump where leakage through the primary liner is pumped back into the surface impoundment. The LCRS is designed with capacity for at least twice the maximum anticipated daily volume of leakage.
 - c. A secondary synthetic liner (45-mil scrim reinforced polypropylene geomembrane).
 - d. A compacted subgrade with minimum slope of 2% towards the LCRS sump and properly constructed per manufacturer's specifications to accept the secondary liner without jeopardizing liner integrity due to surface irregularities.
110. Title 27 section 20080(b) allows the Central Valley Water Board to consider the approval of an engineered alternative to the prescriptive standard. In order to approve an engineered alternative in accordance with Title 27 section 20080(c)(1) or (2), the Discharger must demonstrate that the prescriptive design is unreasonably and unnecessarily burdensome

and will cost substantially more than an alternative which will meet the criteria contained in section 20080(b), or would be impractical and would not promote attainment of applicable performance standards. The Discharger must also demonstrate that the proposed engineered alternative(s) provides protection against water quality impairment equivalent to the prescriptive standard in accordance with Title 27 section 20080(b)(2) of Title 27 and that any proposed engineered alternative is consistent with the performance goal in accordance with Title 27 sections 20240, 20250, and 20310.

111. The Discharger proposes a liner system that will be designed, constructed, and operated to prevent migration of wastes from the Unit to adjacent natural geologic materials, groundwater, or surface water during disposal operations, closure, and the post closure maintenance period in accordance with the criteria set forth in Title 27 for Class II waste management units.
112. The Discharger adequately demonstrated that construction of the liner prescriptive standard for the Class II surface impoundment as described in Title 27 would be unreasonable and/or unnecessarily burdensome when compared to the proposed engineered alternative design because the prescriptive standard using clay as the secondary liner of a double liner system is not as protective of water quality as using the proposed alternative design. The Discharger has demonstrated that the proposed engineered alternative is consistent with the performance goals of the containment structures for a Class II waste management unit affords equivalent protection against water quality impairment.
113. Title 27 section 20370(a) and section 21750(f)(5) requires Class II units to be designed under both static and dynamic conditions to withstand the maximum credible earthquake (MCE) without damage to the Unit, including the foundation, final slopes, and containment structures including structures that control leachate, surface drainage, or erosion, or gas throughout the Unit's life, closure period, and postclosure maintenance period. As part of the ROWD submittal, Terraphase Engineering submitted on behalf of the Discharger a Geotechnical Design Report dated 10 April 2014 that contained a stability analysis for the proposed new Class II surface impoundments (Ponds C and D). The stability analysis for the surface impoundments was performed under both static and dynamic conditions. The static stability analysis indicates a factor of safety of 2.4, which is greater than the factor of safety of 1.5 required by Title 27. The dynamic (seismic) stability analysis using the peak ground acceleration of 0.37g for the MCE indicates a factor of safety of 1.0, which is less than the required 1.5. However, Title 27 section 21750(f)(5)(D) allows the Discharger to utilize a more rigorous analytical method that provides a quantified estimate of the magnitude of movement in lieu of achieving the minimum factor of safety of 1.5. The Discharger used the Makdisi and Seed criteria to further analyze dynamic stability in which the dynamic factor safety was calculated to be 1.3 which is greater than the Makdisi and Seed criteria of 1.15. Furthermore, the Discharger performed a Newmark type analysis which determined that under dynamic conditions the maximum magnitude of movement of the berms during an earthquake is estimated at 9 inches which is less than the minimum freeboard requirement of 2 feet. Therefore, the Discharger concluded "*no loss of freeboard is expected even if the outer slopes of the berm do move.*" Finally, Terraphase Engineering

provided six recommendations during preparation and construction of the berms upon which the stability analysis relies on that the Discharger is responsible for ensuring in order for the stability analysis to be valid. This Order requires the Discharger to implement a Construction Quality Assurance (CQA) plan that implements those recommendations.

114. Title 27 section 20375(a) requires Class II surface impoundments to have sufficient freeboard to accommodate seasonal precipitation, a 1,000-year 24-hour design storm event, but in no case less than two feet. The 1,000 year, 24-hour storm event for the site is 3.14 inches (or 0.3 feet), and is referred to hereafter as the “design storm.” For Title 27 required seasonal precipitation, the Discharger has been required to use the 100-year wet season distributed monthly to prevent overflow of the impoundment or less than two feet of freeboard during a reasonable worst-case scenario wet season. The 100-year 365-day precipitation event for the site is 21.0 inches. The amended ROWD specifies how this rainfall would be distributed monthly as tabulated below:

Month	100-Year Precipitation Distributed Monthly (Inches)
<i>January</i> ¹	4.0
<i>February</i> ¹	3.6
<i>March</i> ¹	2.9
<i>April</i> ¹	1.8
May	1.0
June	0.2
July	0.1
August	0.2
September	0.4
October	1.1
<i>November</i> ¹	2.4
<i>December</i> ¹	3.4
Total	21.0

¹Months shown in italics are considered wet season months

115. An initial water balance for the surface impoundment Ponds B, C, and D was included in the amended ROWD dated 13 December 2013. A revised water balance was submitted on 28 March 2014. The revised water balance is based on the following operational parameters:
- An annual wastewater flow to the ponds of 14.6 MG.
 - Annual evaporation losses of 18.7 MG based on an annual reference evapotranspiration rate of 53.5 inches.
 - The 100-year wet season (21.0 inches) distributed monthly in accordance with average monthly rainfall patterns.

- d. A total evaporative surface area of the ponds of 13.4 acres.
 - e. The design storm event of 3.14 inches, which translates to 1.2 MG additional gallons of capacity or 0.3 feet of freeboard to accommodate the design storm event.
 - f. A maximum working volume of the ponds (below two-foot freeboard level and design storm) of 35.3 MG.
116. Based on the Class II surface impoundment design and construction and the revised water balance operating parameters, the Discharger certifies that the surface impoundments will have sufficient capacity to maintain two feet of freeboard at all times.
117. Because of year-to-year variations in crop production, the Discharger requested that a wastewater flow limitation not be imposed in this Order. The Discharger states that the following options are available and will be used as necessary to ensure full containment of the waste and continuous compliance with the pond freeboard requirements of this Order:
- a. The Discharger can cease operations for extended periods as necessary during the rainy season; and
 - b. The Discharger can haul excess wastewater to a permitted wastewater treatment facility for disposal.

Therefore, it is appropriate for this Order to not include a wastewater flow limitation, but to require frequent flow and freeboard monitoring, as well as detailed reporting of any off-site disposal of excess wastewater. It is also appropriate to require the Discharger to prepare an approved operations and maintenance plan that amongst other things dictates how they will prevent violating the minimum freeboard requirement during the wet season.

118. This Order requires that the Discharger maintain at least 2.0 feet of freeboard at all times. Freeboard is measured from the water surface to the lowest point on top of the surface impoundment berm.
119. This Order includes an Action Leakage Rate (ALR) for the Class II surface impoundment LCRS. The ALR is the maximum flow rate through the primary liner to the LCRS beyond which the Discharger is required to take actions to inspect and repair the primary liner system. The ALR is typically based on the recommendations in the 1992 USEPA guidance document Action Leakage Rate for Leak Detection Systems. The guidance recommends that ALR for lined surface impoundments be set at no more than 1,000 gallons per acre per day (gpad) unless site-specific conditions dictate otherwise.

The Discharger proposed an ALR of 3,000 gpad for the following reasons:

- a. The 1992 EPA guidance document provides for different ALR than the rule of thumb based on site-specific conditions;

- b. The Musco surface impoundments exceed the minimum Title 27 design standards for the secondary liner allowing additional leakage through the primary liner;
- c. The drainage layer's ability to pass 3,000 gpad without building up head on the secondary liner;
- d. Potential difficulties locating very small holes in the primary liner with hypersaline water;
- e. Consulting engineer, Jeff Raines (California Professional Engineer No. C51120 and Geotechnical Engineer No. 2762) certified that an ALR of 6,000 gpad would pass through the LCRS and meet the requirements of Title 27 for head build-up; and
- f. The Santa Ana Regional Water Board allowed 2,700 gpad for a surface impoundment site in the Riverside area.

Staff identified that 1,000 to 3,000 gpad values have been set for WDRs at other Central Valley sites. Therefore, due to the proposed double-lined system and the hypersaline water to be stored in these ponds, this Order sets the 3,000 gpad ALR for the two new surface impoundments Ponds C and D and sets the 1,000 gpad ALR for existing Pond B. The ALR for Pond B is based on historical leakage rates. Actual leakage rates for all three ponds will be calculated based on readings of the flow totalizer that records flow from the LCRS back to the surface impoundment from where the leakage was collected and removed.

120. Discharge of wastewater to Ponds C and D will proceed only after all applicable construction quality assurance reports have been approved by Board staff.

CLEAN CLOSURE AND CLOSURE FINANCIAL ASSURANCES

121. A Preliminary Closure Plan (PCP) for the surface impoundments dated 21 May 2014 is included in the ROWD submittals. Pursuant to Title 27 Section 21400(b)(1), the PCP proposes clean-closure of the surface impoundments. The PCP proposes to prepare and this Order requires that a final closure plan is submitted prior to commencing clean-closure activities. The liner system, LCRS, sludges, and any contaminated soil will be removed and taken to an off-site appropriately-permitted landfill or recycled. The soil underlying the impoundment will be sampled for the presence of contaminants, and if necessary will be removed and disposed of at the appropriate waste disposal site.
122. The PCP includes an itemized cost estimate for third party costs to clean-close the surface impoundments. The total of the estimate to clean close the four surface impoundments at the end of their useful life is \$3.28 million in 2014 dollars. This final cost estimate is approved by the adoption of these WDRs. The majority of the cost estimate is for disposal of solids accumulation in the surface impoundments over their useful life. If a third party were required the clean close the surface impoundments prematurely the total cost estimate would be reduced. These WDRs allow the Discharger to provide prorated financial assurances based on estimated solids accumulation. These WDRs require the Discharger to provide an updated cost for closure based on solids accumulation for each surface impoundment by 17 April 2015. Pursuant to Title 27 Section 22207(a), this Order requires the Discharger to establish financial assurances on a prorated basis for closure of the Class

II surface impoundments in accordance with the approved final cost estimate naming the Central Valley Water Board as the beneficiary.

FINANCIAL ASSURANCES FOR CORRECTIVE ACTION

123. Title 27 Section 22222 requires the Discharger to establish financial assurances for corrective action of a known or reasonably foreseeable release from the Waste Management Unit. A cost estimate for corrective action was not included in the ROWD. This Order requires the Discharger to establish financial assurances for corrective action in accordance with the approved cost estimate naming the Central Valley Water Board as the beneficiary. This Order also requires annual adjustments to account for inflation by 1 June of each year.

CEQA AND OTHER CONSIDERATIONS

124. To fulfill requirements imposed by the California Environmental Quality Act ("CEQA")(Pub. Resources Code, § 21000 et seq.), San Joaquin County Community Development Department prepared and circulated an Initial Study and Mitigated Negative Declaration (SCH #2014032080) that contained an analysis of the potential for the project (construction of two new Class II surface impoundments) to result in significant environmental effects. The Board, acting as a responsible agency, was consulted during the development of these documents. The San Joaquin County Community Development Department certified the Initial Study and Mitigated Negative Declaration on 15 May 2014 and filed a Notice of Determination on 16 May 2014. As a CEQA responsible agency, the Central Valley Water Board finds that the mitigated negative declaration and associated mitigation measures, including issuance of these waste discharge requirements, will ensure that any water quality impacts are less than significant.

This Order implements:

125. The Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition.
126. The prescriptive standards and performance goals of California Code of Regulations, Title 27, section 20005 et seq., effective 18 July 1997, and subsequent revisions.
127. Based on the threat and complexity of the discharge, the facility is determined to be classified 2-B as defined below:
- a. Category 2 threat to water quality, defined as, "*Those discharges of waste that could impair the designated beneficial uses of the receiving water, cause short-term violations of water quality objectives, cause secondary drinking water standards to be violated, or cause a nuisance.*"

b. Category B complexity, defined as, “*Any discharger not included in Category A that has physical, chemical, or biological treatment systems (except for septic systems with subsurface disposal), or any Class 2 or Class 3 waste management units.*”

128. Water Code section 13267(b) provides that: In conducting an investigation specified in subdivision (a), the Regional Board may require that any person who has discharged, discharges, or is suspected of having discharge or discharging, or who proposed to discharge within its region, or any citizen or domiciliary, or political agency or entity of this state who had discharged, discharges, or is suspected of having discharged or discharging, or who proposed to discharge waste outside of its region that could affect the quality of the waters of the state within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the board requires. The burden, including costs of these reports, shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports.
129. The technical reports required by this Order and the attached "Monitoring and Reporting Program No. R5-2014-XXXX" are necessary to assure compliance with these waste discharge requirements. The Discharger owns and operates the facility that discharges the waste subject to this Order.

PROCEDURAL REQUIREMENTS

130. All local agencies with jurisdiction to regulate land use, solid waste disposal, air pollution, and to protect public health have approved the use of this site for the discharges of waste to land stated herein.
131. The Central Valley Water Board notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for this discharge, and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.
132. The Central Valley Water Board, in a public meeting, heard and considered all comments pertaining to the discharge.
133. Any person aggrieved by this action of the Central Valley Water Board may petition the State Water Board to review the action in accordance with Water Code section 13320 and California Code of Regulations, title 23, sections 2050 and following. The State Water Board must receive the petition by 5:00 p.m., 30 days after the date that this Order becomes final, except that if the thirtieth day following the date that this Order becomes final falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next business day. Copies of the law and regulations applicable to filing petitions may be found on the Internet at:

http://www.waterboards.ca.gov/public_notices/petitions/water_quality

or it will be provided upon request.

IT IS HEREBY ORDERED, pursuant to California Water Code sections 13263 and 13267, that Order No. R5-2005-0024 is rescinded except for purposes of enforcement, and that Musco Olive Products, Inc. doing business as Musco Family Olive Company and The Studley Company, their agents, successors, and assigns, in order to meet the provisions of Division 7 of the California Water Code and the regulations adopted thereunder, shall comply with the following:

A. PROHIBITIONS

1. The discharge of 'hazardous waste' is prohibited. For the purposes of this Order, the term 'hazardous waste' is as defined in California Code of Regulations, Title 23, section 2510 et seq.
2. The discharge of solid waste or liquid waste to surface waters, surface water drainage courses, or groundwater is prohibited.
3. The discharge of wastes outside of a waste management unit or portions of a waste management unit specifically designed for their containment is prohibited.
4. The Discharger is prohibited from continuing to place waste in Pond A as soon as Board staff approve all applicable Construction Quality Assurance (CQA) Reports for Ponds C and D.
5. The Discharger is prohibited from allowing the head pressure on the secondary liner of any Class II surface impoundment to exceed one foot.
6. The Discharger is prohibited from placing waste in Ponds C and D unless all applicable construction quality assurance reports have been approved by Board staff.
7. The Discharger shall comply with all applicable Standard Prohibitions listed in Section C of the Standard Provisions and Reporting Requirements dated November 2013 (SPRRs).

B. DISCHARGE SPECIFICATIONS

1. The discharge shall not cause a condition of pollution or nuisance as defined by the Water Code section 13050.
2. Prior to the discharge of waste to a Class II waste management unit, all wells within 500 feet of the unit shall have sanitary seals or shall be properly abandoned. A record of the sealing and/or abandonment of such wells shall be sent to the Central Valley Water Board and to the State Department of Water Resources.
3. The Discharger shall comply with all applicable Standard Discharge Specifications listed in Section D of the SPRRs dated November 2013.

C. FACILITY SPECIFICATIONS

1. Annually, prior to the anticipated rainy season but no later than **1 November**, any necessary construction, maintenance, or repairs of precipitation and drainage control facilities shall be completed and reported as required by MRP No. R5-2014-XXXX.

Class II Surface Impoundments

2. All Class II surface impoundments shall have containment capacity for all wastewater flows into the impoundment, precipitation from a 100-year wet season of 21.0 inches distributed monthly, and a 1,000-year 24-hour storm event of 3.14 inches, and shall maintain at least 2.0 feet of freeboard at all times.
3. The Discharger shall **immediately** notify Board staff by telephone and email, in the event that freeboard levels are equal to or less than the minimum freeboard requirements set forth in Specification C.2.
4. The Discharger shall record daily onsite rainfall using an onsite rain gauge, and continue using the California Irrigation Management and Information system, using station number 167 Tracy (or nearest alternate station if #167 is offline) as a backup to track the magnitude of precipitation events.
5. The Discharger shall also record surface impoundment freeboard levels in accordance with the attached monitoring and reporting program.
6. Any direct-line discharge to a surface impoundment shall have fail-safe equipment or operating procedures to prevent overfilling.
7. The surface impoundment(s) shall be designed, constructed, operated, and maintained to prevent scouring and/or erosion of the liners and other containment features at points of discharge to the impoundments and by wave action at the water line.
8. Leakage removed from a surface impoundment's primary LCRS shall be discharged to the impoundment from which it originated.
9. The **Action Leakage Rate (ALR)** for each Class II surface impoundment is as follows:

Pond Identification	A	B	C	D
Area (acres)	5.4	4.5	4.9	5.1
Action Leakage Rate (gpad)	N/A	1,000	3,000	3,000
Notification Level (gpd) ¹ (33% of ALR)	N/A	1,485	4,851	5,049
Evaluation Monitoring Trigger (gpd) ¹	N/A	2,970	9,702	10,098

(66% of ALR)				
Corrective Action Level (gpd) ¹ (100% of ALR)	N/A	4,500	14,700	15,300

¹Gallons per day (gpd) shall be measured by a calibrated flow totalizer.

- a. If leakage in the LCRS of the Class II surface impoundment exceeds the **Notification Level**, the Discharger shall:
 1. Submit written notification within **seven days** that includes historical and graphical information which describes how the leakage in the class II surface impoundment has increased over time to reach the Notification Level.
 2. Discuss any noticeable increases in leakage rates that may indicate a significant defect has developed in the primary liner.

- b. If leakage in the LCRS of the Class II surface impoundment exceeds the **Evaluation Monitoring Trigger**, the Discharger shall:
 1. **Immediately** notify Board staff by telephone and email.
 2. Submit written notification within **seven days** with an evaluation monitoring plan that proposes increased monitoring and reporting of the LCRS and unsaturated zone, and a contingency plan for how the facility will operate if the pond level reaches the Corrective Action Level.
 3. Provide information specified at the notification level.
 4. Provide estimated schedule of when pond can be repaired to meet facility operational needs.

- c. If leakage in the LCRS of the Class II surface impoundment exceeds the **Corrective Action Level**, the Discharger shall:
 1. **Immediately** notify Board staff by telephone and email.
 2. Submit written notification within **seven days** that includes a time schedule to locate and repair leak(s) in the liner system.
 3. Submit a plan to reduce head pressure on the primary liner such that leakage through the primary liner is reduced to the evaluation monitoring trigger leakage rates.
 4. If repairs do not result in a leakage rate less than the required Notification level leakage rates, the Discharger shall submit written notification within seven days that includes a time schedule for replacement of the upper liner of the surface impoundment or other action necessary to reduce leakage production.
 5. Complete repairs or liner replacement in accordance with the approved time schedule under "2" and/or "4", above.

10. For surface impoundments B, C, and D, the Discharger shall perform an annual LCRS transmissivity test to determine the ability of the LCRS to contain and transmit liquid to its

sump pump without allowing excessive head pressure upon the secondary liner. At least 60 days prior to performing the test, the Discharger shall submit a workplan including proposed pass/fail criteria. The workplan, once approved by Board staff shall be used to determine when the LCRS is failing and when the Discharger is required to perform evaluation monitoring and corrective action.

11. Free liquid detected in a pan lysimeter of a Class II surface impoundment is an indication of a release from the secondary containment structure. In this case, the Discharger shall:
 - a. **Immediately** notify Board staff by telephone and email that free liquid has been detected in the pan lysimeter.
 - b. **Immediately** sample and test the liquid in accordance with the unsaturated zone monitoring requirements in MRP R5-2014-XXXX.
 - c. Submit written notification to Board staff within **seven days** including a time schedule to repair the containment structures, if a release has been confirmed.
 - d. Complete repairs of the containment structures in accordance with the approved time schedule.
12. The Discharger shall distribute wastewater to the class II surface impoundments as shown in Attachment E, the Discharger's wastewater distribution diagram, which is incorporated herein and made part of this Order by reference. Any modification to the Discharger's wastewater distribution diagram contained in Attachment E shall be submitted to the Executive Officer for prior approval as modifications to the Discharger's operations plans per Title 27 sections 20375(b) and 21760(b).
13. Solids that accumulate in the Class II surface impoundments shall be periodically removed to maintain minimum freeboard requirements and to maintain sufficient capacity for surface impoundment inflows. Prior to removal of these solids, sufficient samples shall be taken for their characterization and classification pursuant to Article 2, Subchapter 2, Chapter 3, Division 2 of Title 27. The rationale for the sampling protocol used, the results of this sampling, and a rationale for classification of the solids shall be submitted to Board staff for review at least 60 days prior to the date for the removal of the solids.
14. Solids that accumulate in the solids removal screen as shown in Attachment E (prior to discharge to the Class II surface impoundments) shall be collected in a manner that prevents liquid or other waste from coming in contact with the ground surface.
15. The Discharger shall operate and maintain the Class II surface impoundments in accordance with an approved operations and maintenance plan that complies with Title 27 sections 20375 and 21760(b).
16. The Discharger shall comply with all applicable Standard Facility Specifications listed in Section E of the SPRRs dated November 2013.

D. DESIGN AND CONSTRUCTION SPECIFICATIONS

1. Containment structures and precipitation and drainage control systems shall be constructed and maintained to prevent, to the greatest extent possible, inundation, erosion, slope failure, and washout under 1,000-year, 24-hour precipitation conditions.
2. Waste management units shall be designed, constructed and operated to prevent inundation or washout due to flooding events with a 100-year return period.
3. Materials used to construct liners shall have appropriate physical and chemical properties to ensure containment of discharged wastes over their operating life.
4. Materials used to construct the LCRS shall have appropriate physical and chemical properties to ensure the required transmission of primary liner leakage over the life of the surface impoundments and the post-closure maintenance period.
5. The LCRS shall be designed, constructed, operated, and maintained to collect twice the anticipated daily volume of leakage generated by each surface impoundment and to prevent the buildup of hydraulic head on the underlying liner at any time. The LCRS pump shall be capable of removing this volume of leakage or twice the Action Leakage Rate flow, whichever is greater.
6. The depth of the fluid in any LCRS sump shall be kept at the minimum needed for safe pump operation without excessive pump cycling that could damage the pump.
7. The Discharger shall submit a design report including plans, specifications, and a construction quality assurance plan for review and approval prior to constructing any new lined waste management unit.
8. The Discharger shall submit a final report documenting construction of any new lined waste management unit for review and approval prior to discharging wastes to the waste management unit.
9. The Discharger shall comply with all Standard Design and Construction Specifications listed in Section E of the SPRRs dated November 2013.

Class II Surface Impoundments

10. The Class II surface impoundment liner system shall consists of:
 - a. For Pond B from the top down:
 1. A primary synthetic liner (45-mil Hypalon reinforced chlorosulfonated polyethylene synthetic liner).

2. A six to twelve inch free-draining leachate collection and recovery system (LCRS).
 3. A secondary liner (two to three-foot thick low permeability clay layer).
 4. A compacted subgrade.
- b. For Ponds C and D, the liner system shall consist of:
1. A primary synthetic liner (80-mil High Density Polyethylene (HDPE) geomembrane).
 2. A LCRS (Non-woven 6-ounce needle-punched geotextile bonded on both sides of a 300-mil tri-planar geonet).
 3. A secondary synthetic liner (45-mil scrim reinforced polypropylene geomembrane).
 4. A compacted subgrade with minimum slope of 2% towards the LCRS sump that is properly constructed per manufacturer's specifications to accept the secondary liner without jeopardizing liner integrity due to surface irregularities.
11. All Class II surface impoundments shall have a LCRS sump to collect and return all liquid within the sump to the impoundment resulting from leakage through the primary liner. The LCRS sump shall include a dedicated automated pump to remove leakage and return it to the impoundment.
12. All Class II surface impoundments shall have backup provisions installed, operational, and routinely tested for the LCRS dedicated automated sump pump such that the time interval required to repair/replace a LCRS sump pump shall not cause leakage from the primary liner to the sump area from exceeding a maximum one-foot pressure head limitation on the sump secondary liner.
13. All Class II surface impoundments shall have a flow totalizer to measure liquid volumes pumped from the LCRS sump in order to track leakage rates.
14. All new Class II surface impoundments shall have an unsaturated zone monitoring system consisting of a pan lysimeter beneath the entire LCRS sump area of the impoundment that is capable of detecting a release to the unsaturated zone at the earliest time possible per Title 27 requirements.
15. All Class II surface impoundments and any overflow basin shall have permanent markings on the liner, or a permanent freeboard gauge so that the freeboard can be observed and recorded at any time. The reference point zero shall be in relation to the lowest point along the top of the surface impoundment containment berm e.g. spillway. The markings or gauge shall have increments no greater than 0.10 feet in vertical height. The freeboard gauge shall also have major markings clearly indicating critical freeboard depths including 2-foot vertical freeboard level below the reference point.

16. The Discharger shall comply with all applicable Standard Construction Specifications listed in Section F of the SPRRs dated November 2013.

17. The Discharger shall comply with all applicable Storm Water Provisions listed in Section L of the SPRRs dated November 2013.

E. CLOSURE AND POST-CLOSURE MAINTENANCE SPECIFICATIONS

1. At closure of a Class II surface impoundment, the Discharger shall propose clean closure of the unit pursuant to Title 27 section 21400(b)(1) unless demonstrated and the Central Valley Water Board finds that it is infeasible to attempt clean closure. In the case of clean closure, all precipitates, settled solids, and liner materials contaminated by wastes, and adjacent natural geologic materials contaminated by wastes shall be completely removed for disposal to an approved Unit in accordance with an approved Pond A final closure plan and detailed schedule as required in Provision H.11.c. If after reasonable attempts to remove contaminated natural geologic materials, the Discharger demonstrates that removal of all remaining contamination is infeasible, the impoundment and/or overflow basins shall be closed as a landfill pursuant to Title 27 section 21400(b)(2)(A). In this event, the Discharger shall backfill and grade the area and submit a revised Final Closure and Post-Closure Maintenance Plan proposing a final cover meeting the requirements of Title 27 section 21090 and shall perform all post-closure maintenance in the approved Post-Closure Maintenance Plan. The Discharger shall also submit updated Financial Assurances for post closure maintenance and monitoring.
2. Prior to closure, the Discharger shall submit a Final Closure and Post-Closure Maintenance Plan prepared by a California-registered civil engineer or certified engineering geologist, and that contains all applicable information required in Title 27 section 21769. The plan shall include any applicable closure/post-closure elements proposed in the ROWD, and shall meet the requirements of this Order.
3. The Discharger shall comply with all Closure and Post-Closure Maintenance Specifications listed in Section F of the SPRRs dated November 2013.

F. FINANCIAL ASSURANCE

1. By **17 April 2015**, pursuant to Title 27 Section 22207, the Discharger shall submit a report showing that it has established an irrevocable closure fund financial assurance with the Central Valley Water Board named as beneficiary to ensure final closure of all Class II surface impoundments with the closure fund balance increasing proportional to estimated solids accumulation in the surface impoundments. The initial irrevocable fund financial assurances balance shall be established based on initial closure costs of all four surface impoundments as of **17 April 2015** and shall increase on a prorated basis to the final closure cost submitted by the Discharger in accordance with the cost estimate in the Closure Plan dated 21 May 2014 submitted as an ROWD addendum. The financial assurances mechanism shall be one or a combination of the eligible mechanisms approved for closure listed in Title 27 Section 22228 for which the Discharger is eligible.

For financial assurance mechanisms eligible for closure costs requiring funding, the Discharger shall either fully fund the mechanism by **17 April 2015** for estimated closure costs as of 17 April 2015 or may propose a payment schedule. If the Discharger proposes a payment schedule to fund the mechanism, they shall submit a report by **1 June 2015** showing the means and the schedule by which the mechanism is fully funded. For financial assurance mechanisms eligible for closure costs not requiring funding, the Discharger shall submit a report showing the mechanism is in place by **1 June 2015**.

2. By **17 April 2015**, pursuant to Title 27 Section 22222, the Discharger shall submit a report showing that it has established an irrevocable corrective action fund financial assurance with the Central Valley Water Board named as beneficiary to ensure funds are available to address a known or reasonably foreseeable release from all Class II surface impoundments. The financial assurance mechanism shall be one or a combination of the eligible mechanisms approved for corrective action listed in Title 27 Section 22228 for which the Discharger is eligible. For financial assurance mechanisms eligible for corrective action costs requiring funding, the Discharger shall either fully fund the mechanism by **17 April 2015** or may propose a payment schedule. If the Discharger proposes a payment schedule to fund the mechanism, it shall submit a report by **1 June 2015** showing the means and the schedule by which the mechanism is fully funded. For financial assurance mechanisms eligible for corrective action costs not requiring funding, the Discharger shall submit a report showing the mechanism is in place by **1 June 2015**.
3. By **1 June** of each year following 2015, the Discharger shall submit a report to the Central Valley Water Board that reports the balance of both the closure and corrective action funds or the amounts of the Guarantees and the adjustments to account for inflation in accordance with Title 27 Section 22236.
4. The Discharger shall comply with all applicable Standard Financial Assurance Specifications listed in Section H of the SPRRs dated November 2013.

G. MONITORING SPECIFICATIONS

1. The Discharger shall comply with the detection monitoring program provisions of Title 27 for groundwater, surface water, and the unsaturated zone, and in accordance with Monitoring and Reporting Program (MRP) No. R5-2014-XXXX, and the applicable Standard Monitoring Specifications listed in Section I of the SPRRs dated November 2013.
2. The Discharger shall, for any waste management unit in a corrective action monitoring program, comply with the corrective action monitoring program provisions of Title 27, MRP No. R5-2014-XXXX, and the applicable Standard Monitoring Specifications listed in Section I of SPRRs dated November 2013.
3. The Discharger shall comply with the Water Quality Protection Standard as specified in this Order, MRP No. R5-2014-XXXX, and the applicable sections of the SPRRs dated November 2013.

4. The concentrations of the constituents of concern (COCs) in waters passing the Point of Compliance (defined pursuant to Title 27, section 20164 as a vertical surface located at the hydraulically downgradient limit of the waste management unit that extends through the uppermost aquifer underlying the unit) or Monitoring Points shall not exceed the concentration limits established pursuant to MRP No. R5-2014-XXXX.
5. For each monitoring event, the Discharger shall determine whether the waste management unit is in compliance with the Water Quality Protection Standard using procedures specified in MRP No. R5-2014-XXXX and the Standard Monitoring Specifications in Section I of the SPRRs dated November 2013.
6. The Discharger shall comply with MRP No. R5-2014-XXXX regarding any changes to the Discharger's monitoring system for its Class II surface impoundments due to implementation of an Evaluation Monitoring Program or Corrective Action Program on any WMU.
7. The Discharger shall comply with all applicable Standard Monitoring Specifications and Response to a Release specifications listed in Sections I and J of the SPRRs dated November 2013.

H. PROVISIONS

1. The Discharger shall comply with the applicable sections of the Standard Provisions and Reporting Requirements, dated November 2013, which are attached hereto and made part of this Order by reference. The Standard Provisions and Reporting Requirements contain important provisions and requirements with which the Discharger must comply. A violation of any of the applicable Standard Provisions and Reporting Requirements is a violation of these waste discharge requirements.
2. Pursuant to Water Code section 13267, the Discharger shall comply with Monitoring and Reporting Program No. R5-2014-XXXX, which is attached to and made part of this Order. This compliance includes, but is not limited to, maintenance of waste containment facilities and precipitation and drainage controls and monitoring groundwater, the unsaturated zone, and surface waters throughout the active life of the waste management units and any applicable post-closure maintenance period. A violation of Monitoring and Reporting Program No. R5-2014-XXXX is a violation of these waste discharge requirements.
3. The Discharger shall maintain a copy of this Order at the facility and make it available at all times to facility operating personnel, who shall be familiar with its contents, and to regulatory agency personnel.
4. The Discharger shall maintain legible records of the volume and type of waste discharged to the surface impoundments and the manner and location of the discharge. Such records shall be maintained at the facility until the beginning of the post-closure

maintenance period for each surface impoundment. These records shall be available for review by representatives of the Central Valley Water Board and of the State Water Resources Control Board. Copies of these records shall be sent to the Central Valley Water Board upon request.

5. The Discharger shall comply with all applicable provisions in Title 27 regulations that are not specifically referred to in this Order.
6. The Discharger shall, in a timely manner, remove and relocate any wastes discharged at this facility in violation of this Order and of the California Water Code.
7. The Discharger shall immediately notify the Central Valley Water Board of any flooding, equipment failure, slope failure, or other change in site conditions that could impair the integrity of waste or wastewater containment facilities or precipitation and drainage control structures.
8. In the event of any change in control or ownership of the facility or disposal areas, the Discharger must notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to this office. To assume operation as Discharger under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order. The request must contain the requesting entity's full legal name, the state of incorporation if a corporation, the name and address and telephone number of the persons responsible for contact with the Central Valley Water Board, and a statement. The statement shall comply with the signatory paragraph of General Provision K.2.e in the Standard Provisions and Reporting Requirements and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code. Transfer shall be approved or disapproved by the Executive Officer.
9. The Discharger shall provide proof to the Central Valley Water Board **within sixty days after completing final closure** of a surface impoundment that the deed to the facility property, or some other instrument that is normally examined during title search, has been modified to include, in perpetuity, a notation to any potential purchaser of the property stating that:
 - a. The parcel has been used for disposal of wastes.
 - b. Land use options for the parcel are restricted in accordance with post-closure land uses set forth in any post-closure plan (if applicable).
 - c. In the event that the Discharger defaults on carrying out either any corrective action needed to address a release, groundwater monitoring, or any post-closure maintenance (if applicable), then the responsibility for carrying out such work falls to

the property owner.

10. All technical reports required herein that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code sections 6735, 7835, and 7835.1. As required by these laws, completed technical reports must bear the signature(s) and seal(s) of the registered professional(s) in a manner such that all work can be clearly attributed to the professional responsible for the work.
11. This Order requires the Discharger to clean close Pond A following completion of Ponds C and D. Clean closure of Pond A shall be completed as presented in the following table. The reports shall be submitted pursuant to section 13267 of the Water Code.

<u>Task</u>	<u>Compliance Date</u>
a. Submit all applicable Final Construction Quality Assurance (CQA) Reports for Ponds C and D to demonstrate that construction was completed in accordance with approved construction plans (see Standard Construction Specifications in Section F of the SPRRs). The CQA Reports shall include a description of the permanent pumps and pipes to be used to convey wastewater to Ponds B, C, and D.	1 December 2014
b. Cease Discharge to Pond A and provide Board staff evidence 30 days thereafter that the Discharger is no longer able to discharge to Pond A.	Upon Board staff approval of CQA Reports for Ponds C and D.
c. Provide a final closure plan and detailed schedule describing the clean closure of Pond A in compliance with these WDRs and Title 27.	1 May 2015
d. Drain Pond A. A maximum of 20 months for	1 September 2016

evaporation and 1-month for solids/sludge removal is granted. Title 27 section 21400(a) requires removal of all free liquid remaining in Pond A at the time of closure. This order grants this extended period for removal of free liquid upon closure as long as Pond A does not show evidence of a release from the Unit.	
e. Submit confirmation letter report with photo documentation that Pond A liquid has been removed.	15 September 2016.
f. Submit final closure report documenting clean closure of Pond A.	15 March 2017

12. The following reports shall be submitted pursuant to Section 13267 of the California Water Code and shall be prepared in accordance with Provisions H.10:

<u>Task</u>	<u>Compliance Date</u>
a. Submit the following incomplete ROWD Information:	
1. Revised Well Information: Submit surrounding well information that complies with Title 27 section 21750(h), and as described in Finding 80.	9 January 2015
2. Revised Sampling and Analysis Plan: Submit a Sampling and Analysis Plan that complies with Title 27 section 20415(e)(4-5) and the MRP	9 January 2015
3. WQPS: Submit a proposed Water Quality Protection Standards that complies with Title 27 section 20390 for groundwater and unsaturated zone for Ponds B, C, and D using a minimum of 8 samples. The WQPS shall establish background water quality for the purposes of anti-degradation analysis and for establishing concentration limits at each monitoring point and point of compliance.	20 March 2015
4. Plans and Specifications (LCRS Sumps): Submit final plans and specifications (stamped) for LCRS sump for Ponds C and D monitoring system (see all Construction Specifications in Section D above, and Section F of the SPRRs.)	9 January 2015

<p>5. Plans and Specifications (Wastewater Distribution): Submit final plans and specifications (stamped) for process water piping and distributions system to all Class II surface impoundments (see all Construction Specifications in Section D above, and Section F of the SPRRs.)</p>	<p>9 January 2015</p>
<p>6. Corrective Action Financial Assurance Estimate: Submit updated financial assurances estimate that complies with Title 27 section 22222 for corrective action for known or reasonably foreseeable releases from all class II surface impoundments.</p>	<p>17 April 2015</p>
<p>7. Monitoring System Certification: Submit certification per Title 27 Section 20415(e)(1) that the Class II surface impoundment monitoring system complies with Title 27 requirements. This task can be submitted in conjunction with Task H.12.b.1 as part of the Detection Monitoring Program evaluation.</p>	<p>20 March 2015</p>
<p>8. Revised Operations and Maintenance (O&M) Plan: Submit an O&M Plan that complies Title 27 section sections 20375 and 21760(b) as well as describes how freeboard violations will be prevented during the wet season(see Finding 117 and Facility Specification C.15)</p>	<p>1 February 2015</p>
<p>9. Financial Assurances: Submit financial assurance demonstrations for closure and corrective action, as described in Specifications F.1 and F.2.</p>	<p>17 April 2015</p>
<p>b. Submit the following plans and reports:</p>	
<p>1. Pond B Detection Monitoring Program Evaluation: Title 27 section 20415 identifies that a sufficient number of monitoring points must be installed at appropriate locations and depths to yield soil pore and groundwater samples. Due to inoperative suction lysimeters at Pond B and declining groundwater levels across the Musco site, the Discharger shall complete a full Detection Monitoring Program evaluation to determine if the unsaturated and saturated zones are adequately being monitored to provide the earliest detection of a release from the surface impoundment units. By 20 March 2015, the Discharger shall submit the results of the unsaturated</p>	<p>20 March 2015</p>

<p>and saturated Detection Monitoring Program evaluation with a work plan as necessary to bring the site into compliance with Title 27 requirements.</p>	
<p>2. Pond D Compliance Well Placement: Submit a technical report that certifies that compliance point MW-35R is placed downgradient of Pond D sump and the two associated piezometers (constructed as monitoring wells) have been located such that they comply with Title 27 requirements for a groundwater monitoring system.</p>	<p>2 March 2015</p>

13. In the event of any change in ownership of this waste management facility, the Discharger shall notify the succeeding owner or operator in writing of the existence of this Order. A copy of that notification shall be sent to the Central Valley Water Board.
14. The Central Valley Water Board will review this Order periodically and may revise requirements when necessary.
15. This Order shall take effect upon the date of adoption.
16. The Discharger shall comply with all applicable General Provisions listed in Section K of the SPRRs dated November 2013.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on _____.

 PAMELA C. CREEDON, Executive Officer

VKJ/WMH